

表 10-15 正激变换器拓扑最大可能输出功率

磁芯	输出功率 (W)												
	$A_e(\text{cm}^2)$	$A_w(\text{cm}^2)$	$A_e A_w(\text{cm}^4)$	20kHz	24kHz	48kHz	72kHz	96kHz	150kHz	200kHz	250kHz	300kHz	体积( $\text{cm}^3$ )
E 型磁芯 Philips													
814E250	0.202	0.171	0.035	1.1	1.3	2.7	4.0	5.3	8.3	11.1	13.8	16.6	0.57
813E187	0.225	0.329	0.074	2.4	2.8	5.7	8.5	11.4	17.8	23.7	29.6	35.5	0.89
813E343	0.412	0.359	0.148	4.7	5.7	11.4	17.0	22.7	35.5	47.3	59.2	71.0	1.64
812E250	0.395	0.581	0.229	7.3	8.8	17.6	26.4	35.3	55.1	73.4	91.8	110.2	1.93
782E272	0.577	0.968	0.559	17.9	21.4	42.9	64.3	85.8	134.0	178.7	223.4	268.1	3.79
E375	0.810	1.149	0.931	29.8	35.7	71.5	107.2	143.0	223.4	297.8	372.3	446.7	5.64
E21	1.490	1.213	1.807	57.8	69.4	138.8	208.2	277.6	433.8	578.4	722.9	867.5	11.50
783E608	1.810	1.781	3.224	103.2	123.8	247.6	371.4	495.1	733.7	1031.6	1289.4	1547.3	17.80
783E776	2.330	1.810	4.217	135.0	161.9	323.9	485.8	647.8	1012.2	1349.5	1686.9	2024.3	22.90
E625	2.340	1.370	3.206	102.6	123.1	246.2	369.3	492.4	769.4	1025.9	1282.3	1538.8	20.80
E55	3.530	2.800	9.884	316.3	379.5	759.1	1138.6	1518.2	2372.2	3162.9	3953.6	4744.3	43.50
E75	3.380	2.160	7.301	233.6	280.4	560.7	841.1	1121.4	1752.2	2336.3	2920.3	3504.4	36.00
EC 型磁芯 Philips													
EC35	0.843	0.968	0.816	26.1	31.3	62.7	94.0	125.3	195.8	261.1	326.4	391.7	6.53
EC41	1.210	1.350	1.634	52.3	62.7	125.5	188.2	250.9	392.0	522.7	653.4	784.1	10.80
EC52	1.800	2.130	3.834	122.7	147.2	294.5	441.7	588.9	920.2	1226.9	1533.6	1840.3	18.80
EC70	2.790	4.770	13.308	425.9	511.0	1022.1	1533.1	2044.2	3194.0	4258.7	5323.3	6388.0	41.10
ETD 型磁芯 Philips													
ETD29	0.760	0.903	0.686	22.0	26.4	52.7	79.1	105.4	164.7	219.6	274.5	329.4	5.50
ETD34	0.971	1.220	1.185	37.9	45.5	91.0	136.5	182.0	284.3	379.1	473.8	568.6	7.64
ETD39	1.250	1.740	2.175	69.6	83.5	167.0	250.6	334.1	522.0	696.0	870.0	1044.0	11.50
ETD44	1.740	2.130	3.706	118.6	142.3	284.6	427.0	569.3	889.0	1186.0	1482.5	1779.0	18.00
ETD49	2.110	2.710	5.718	183.0	219.6	439.2	658.7	878.3	1372.3	1829.8	2287.2	2744.7	24.20

输出功率 (W)													
磁芯	$A_e(\text{cm}^2)$	$A_w(\text{cm}^2)$	$A_e A_w(\text{cm}^4)$	20kHz	24kHz	48kHz	72kHz	96kHz	150kHz	200kHz	250kHz	300kHz	体积( $\text{cm}^3$ )
P 型 (罐型) 磁芯 Philips													
704	0.070	0.022	0.002	0.0	0.1	0.1	0.2	0.2	0.4	0.5	0.6	0.7	0.07
905	0.101	0.034	0.003	0.1	0.1	0.3	0.4	0.5	0.8	1.1	1.4	1.6	0.13
1107	0.167	0.054	0.009	0.3	0.3	0.7	1.0	1.4	2.2	2.9	3.6	4.3	0.25
1408	0.251	0.097	0.024	0.8	0.9	1.9	2.8	3.7	5.8	7.8	9.7	11.7	0.50
1811	0.433	0.187	0.081	2.6	3.1	6.2	9.3	12.4	19.4	25.9	32.4	38.9	1.12
2213	0.635	0.297	0.189	6.0	7.2	14.5	21.7	29.0	45.3	60.4	75.4	90.5	2.00
2616	0.948	0.407	0.386	12.3	14.8	29.6	44.4	59.3	92.6	123.5	154.3	185.2	3.53
3019	1.380	0.587	0.810	25.9	31.1	62.2	93.3	124.4	194.4	259.2	324.0	388.8	6.19
3622	2.020	0.774	1.563	50.0	60.0	120.1	180.1	240.2	375.2	500.3	625.4	750.5	10.70
4229	2.660	1.400	3.724	119.2	143.0	286.0	429.0	572.0	893.8	1191.6	1489.6	1787.5	18.20
RM 磁芯													
RM5	0.250	0.095	0.024	0.8	0.9	1.8	2.7	3.6	5.7	7.6	9.5	11.4	0.45
RM6	0.370	0.155	0.057	1.8	2.2	4.4	6.6	8.8	13.8	18.4	22.9	27.5	0.80
RM8	0.630	0.310	0.195	6.2	7.5	15.0	22.5	30.0	46.9	62.5	78.1	93.7	1.85
RM10	0.970	0.426	0.413	13.2	15.9	31.7	47.6	63.5	99.2	132.2	165.3	198.3	3.47
RM12	1.460	0.774	1.130	36.2	43.4	86.8	130.2	173.6	271.2	361.6	452.0	542.4	8.34
RM14	1.980	1.100	2.178	69.7	83.6	167.3	250.9	334.5	522.7	697.0	871.2	1045.4	13.19
PQ 磁芯 Philips													
42016	0.620	0.256	0.159	5.1	6.1	12.2	18.3	24.4	38.1	50.8	63.5	76.2	2.31
42020	0.620	0.384	0.238	7.6	9.1	18.3	27.4	36.6	57.1	76.2	95.2	114.3	2.79
42620	1.190	0.322	0.383	12.3	14.7	29.4	44.1	58.9	92.0	122.6	153.3	183.9	5.49
42625	1.180	0.502	0.592	19.0	22.7	45.5	68.2	91.0	142.2	189.6	236.9	284.3	6.53
43220	1.700	0.470	0.799	25.6	30.7	61.4	92.0	122.7	191.8	255.7	319.6	383.5	9.42
43230	1.610	0.994	1.600	51.2	61.5	122.9	184.4	245.8	384.1	512.1	640.1	768.2	11.97
43535	1.960	1.590	3.116	99.7	119.7	239.3	359.0	478.7	747.9	997.2	1246.6	1495.9	17.26
44040	2.010	2.490	5.005	160.2	192.2	384.4	576.6	768.8	1201.2	1601.6	2002.0	2402.4	20.45

注：表中输出功率按式 (7.13) 计算。 $P_o=1.012fB_{max}A_eA_w \times 10^{-2}(\text{W})$ 。其中  $B_{ma}=0.16\text{T}$ ,如果在给定工作频率时材料允许  $B < B_{max}$ ,输出功率应乘以  $B/0.16$ ;  $-T, A_e$  和  $A_w - \text{cm}^2$ ,  $f - \text{Hz}$ ,  $k_w$  - 窗口填充系数为 0.4, 导线电流密度为  $4\text{A/mm}^2$ , 如果  $J$  不是  $4\text{A/mm}^2$ , 输出功率应乘以系数  $J/4$ 。对于推挽电路, 输出功率乘以 2。

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表 10.－16 半桥或全桥最大输出功率

输出功率 (W)													
磁芯	$A_e(\text{cm}^2)$	$A_w(\text{cm}^2)$	$A_e A_w(\text{cm}^4)$	20kHz	24kHz	48kHz	72kHz	96kHz	150kHz	200kHz	250kHz	300kHz	体积( $\text{cm}^3$ )
E 型磁芯 Philips													
814E250	0.202	0.171	0.035	3.1	3.7	7.4	11.2	14.9	23.2	30.9	38.7	46.4	0.57
813E187	0.225	0.329	0.074	6.6	8.0	15.9	23.9	31.8	49.7	66.3	82.9	99.5	0.89
813E343	0.412	0.359	0.148	13.3	16.0	31.8	47.8	63.6	99.4	132.5	165.7	198.8	1.64
812E250	0.395	0.581	0.229	20.6	24.8	49.3	74.1	98.7	154.2	205.6	257.0	308.4	1.93
782E272	0.577	0.968	0.559	50.0	60.3	120.1	180.4	240.2	375.3	500.4	626.6	750.7	3.79
E375	0.810	1.149	0.931	83.4	100.5	200.1	300.6	400.2	625.4	833.9	1042.4	1250.8	5.64
E21	1.490	1.213	1.807	161.9	195.2	388.6	583.8	777.2	1214.6	1619.4	2024.3	2429.1	11.50
783E608	1.810	1.781	3.224	288.8	348.1	693.1	1041.2	1386.2	2166.2	2888.4	3610.4	4332.5	17.80
783E776	2.330	1.810	4.217	377.9	455.5	906.7	1362.8	1813.4	2834.0	3778.7	4623.4	5668.1	22.90
E625	2.340	1.370	3.206	287.2	346.2	689.2	1035.5	1378.5	2154.3	2872.4	3590.5	4308.6	20.80
E55	3.530	2.800	9.884	885.6	1067.5	2125.1	3192.5	4250.1	6642.0	8856.1	11070.1	13284.1	43.50
E75	3.380	2.160	7.301	654.2	788.5	1569.7	2358.2	3139.3	4906.1	6541.5	8176.9	9812.3	36.00
EC 型磁芯 Philips													
EC35	0.843	0.968	0.816	73.1	88.1	175.4	263.6	350.9	548.4	731.2	913.9	1096.7	6.53
EC41	1.210	1.350	1.634	146.4	176.4	351.2	527.6	702.4	1097.7	1463.6	1829.5	2195.4	10.80
EC52	1.800	2.130	3.834	343.5	414.1	824.3	1238.4	1648.6	2576.4	3435.3	4294.1	5152.9	18.80
EC70	2.790	4.770	13.308	1192.4	1437.3	2861.3	4298.6	5722.6	8943.2	11924.2	14905.3	17886.4	40.10
ETD 型磁芯													
ETD29	0.760	0.903	0.686	61.5	74.1	147.6	221.7	295.1	461.2	614.9	768.6	922.4	5.50
ETD34	0.971	1.220	1.185	106.1	127.9	254.7	382.6	509.4	796.1	1061.4	1326.8	1592.1	7.64
ETD39	1.250	1.740	2.175	194.9	234.9	467.6	702.5	935.3	1461.6	1948.8	2436.0	2923.2	11.50
ETD44	1.740	2.130	3.706	332.1	400.3	796.8	1197.1	1593.7	2490.6	3320.8	4150.9	4981.1	18.00
ETD49	2.110	2.710	5.718	512.3	617.6	1229.4	1846.9	2458.8	3842.6	5123.4	6404.3	7685.1	24.20

磁芯	$A_e(\text{cm}^2)$	$A_w(\text{cm}^2)$	$A_e A_w(\text{cm}^4)$	20kHz	24kHz	48kHz	72kHz	96kHz	150kHz	200kHz	250kHz	300kHz	体积( $\text{cm}^3$ )
P 型 (罐型) 磁芯 Philips													
704	0.070	0.022	0.002	0.1	0.2	0.3	0.5	0.7	1.0	1.4	1.7	2.1	0.07
905	0.101	0.034	0.003	0.3	0.4	0.7	1.1	1.5	2.3	3.1	3.8	4.6	0.13
1107	0.167	0.054	0.009	0.8	1.0	1.9	2.9	3.9	6.1	8.1	10.1	12.1	0.25
1408	0.251	0.097	0.024	2.2	2.6	5.2	7.8	10.4	16.3	21.8	27.2	32.7	0.50
1811	0.433	0.187	0.081	7.3	8.7	17.4	26.2	34.8	54.4	72.6	90.7	108.8	1.12
2213	0.635	0.297	0.189	16.9	20.4	40.5	60.9	81.1	126.7	169.0	211.2	253.5	2.00
2616	0.948	0.407	0.386	34.6	41.7	83.0	124.6	165.9	259.3	345.7	432.1	518.6	3.53
3019	1.380	0.587	0.810	72.6	87.5	174.2	261.6	348.3	544.4	725.8	907.2	1088.7	6.19
3622	2.020	0.774	1.563	140.1	168.9	336.1	505.0	672.3	1050.7	1400.9	1751.1	2101.3	10.70
4229	2.660	1.400	3.724	333.7	402.2	800.1	1202.9	1601.3	2502.5	3336.7	4170.9	5005.1	18.20
RM 磁芯 Philips													
RM5	0.250	0.095	0.024	2.1	2.6	5.1	7.7	10.2	16.0	21.3	26.6	31.9	0.45
RM6	0.370	0.155	0.057	5.1	6.2	12.3	18.5	24.7	38.5	51.4	64.2	77.1	0.80
RM8	0.630	0.310	0.195	17.5	21.1	42.0	63.1	84.0	131.2	175.0	218.7	262.5	1.85
RM10	0.970	0.426	0.413	37.0	44.6	88.8	133.5	177.7	277.7	370.2	462.8	555.4	3.47
RM12	1.460	0.774	1.130	101.3	122.0	243.0	365.0	485.9	759.4	1012.5	1265.6	1518.8	8.34
RM14	1.980	1.100	2.178	195.1	235.2	468.3	703.5	936.5	1463.6	1951.5	2439.4	2927.2	13.19
PQ 磁芯 Philips													
42016	0.620	0.256	0.159	14.2	17.1	34.1	51.3	68.2	106.7	142.2	177.8	213.3	2.31
42020	0.620	0.384	0.238	21.3	25.7	51.2	76.9	102.4	160.0	213.3	266.6	320.0	2.79
42620	1.190	0.322	0.383	34.3	41.4	82.4	123.8	164.8	257.5	343.3	429.2	515.0	5.49
42625	1.180	0.502	0.592	53.1	64.0	127.4	191.3	254.7	398.1	530.8	663.4	796.1	6.53
43220	1.700	0.470	0.799	71.6	86.3	171.8	258.1	343.6	536.9	715.9	894.9	1073.9	9.42
43230	1.610	0.994	1.600	143.4	172.8	344.1	516.9	688.1	1075.4	1433.9	1792.4	2150.9	11.97
43535	1.960	1.590	3.116	279.2	336.6	670.0	1006.6	1340.1	2094.2	2792.3	3490.4	4188.4	17.26
44040	2.010	2.490	5.005	448.4	540.5	1076.1	1616.6	2152.1	3363.3	4484.4	5605.5	6726.6	20.45

注：表中输出功率按式 (7.23) 计算。 $P_0=2.864fB_{max}A_eA_w \times 10^{-2}(\text{W})$ 。其中  $B_{ma}=0.16\text{T}$ ，如果在给定工作频率时材料允许  $B < B_{max}$ ，输出功率应乘以  $B/0.16$ ； $T, A_e$  和  $A_w - \text{cm}^2$ ， $f - \text{Hz}$ ， $k_w$ —窗口填充系数为 0.4，导线电流密度为  $4\text{A}/\text{mm}^2$ ，如果  $J$  不是  $4\text{A}/\text{mm}^2$ ，输出功率应乘以系数  $J/4$ 。  
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